

California's Marine Invasive Species Program



August 11, 2010

California State Lands Commission

California Water Quality Monitoring Council

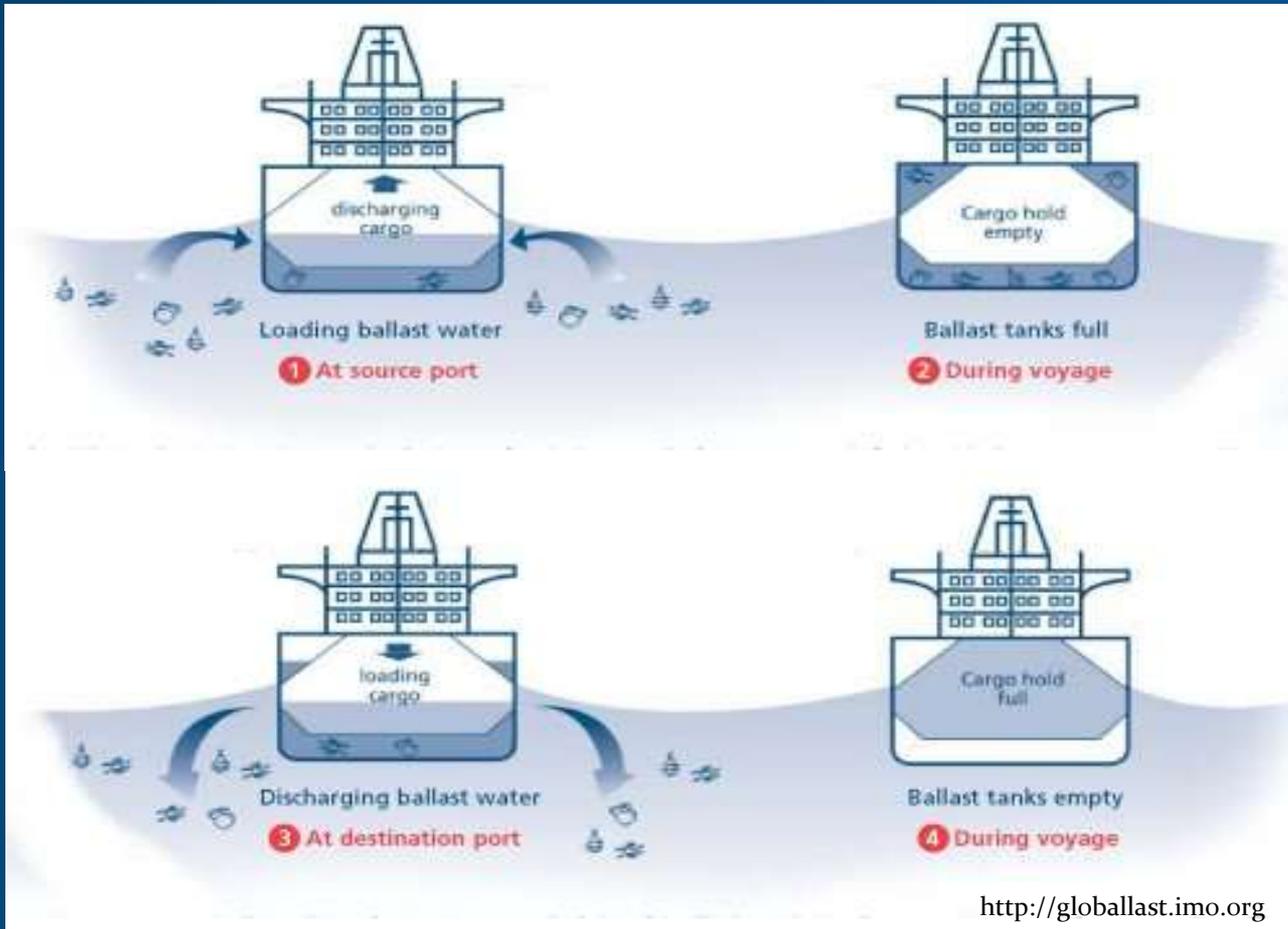
Nonindigenous Species (NIS) Why the Concern?

Impacts: Fisheries • Aquaculture • Ecology • Human Health • Municipalities
• Agriculture • Recreation • Tourism

Zebra Mussel & Quagga Mussel



Commercial Shipping Vectors: Ballast Water



One of the most important marine transport vectors

Ballast water exchange is primary management tool

7000+ species moved per day

Commercial Shipping Vectors: Hull Fouling



- Slow vessels
- Sedentary vessels
- Sheltered areas
- Areas with older antifouling paint
- Released via spawning or getting rubbed/knocked off



Marine Invasive Species Program Legislative History

California Ballast Water Management for Control of Nonindigenous Species Act (1999)

- Ballast water management – Arrivals outside the EEZ
- Ballast water reporting
- Exempted tankers in domestic trade

Marine Invasive Species Act (2003)

- Reauthorization/renewal
- Recommend performance standards
- Recommendations for other commercial vessel mechanisms
- Ballast water management for arrivals from Pacific Coast Region
- Removed tanker exemption



Marine Invasive Species Program Legislative History Continued

Ecosystem Protection Act (2006)

- Implementation of performance standards
- Assess efficacy, availability and environmental impacts of currently ballast water treatment technologies

Assembly Bill 740 (2007)

- Requires “regular” removal of fouling
- Submission of Hull Husbandry Reporting Form
- Recommend management in 2012



MISP Laws and Regulations

Apply To Vessels

- 300 GRT or larger
- Capable of carrying ballast
- Operating in California waters

Exempted Vessels

- Armed forces
- Innocent passage

General Requirements

- Ballast Water Management
- Ballast water reporting form submission
- Recordkeeping
- Fouling Removal
- Hull Husbandry Reporting
- Fee



Components of the CSLC's Marine Invasive Species Program

Program Management (4 Staff)

- Policy development
- Stakeholder coordination (regulators, scientists, sister agencies, environmental organizations, etc...)
- Technical Advisory Group facilitation

Data Management & Field Office Coordination (9 Staff)

- Ballast water reporting forms
- Field office coordination
- Vessel & agent point of contact
 - Outreach

Field Offices (7 FT Positions)

- Vessel inspections
- Scientist facilitation
 - Outreach



Ballast Water Recordkeeping

Ballast Water Reporting Forms - 2 years

Ballast Water Log - 2 years



CA Recognized Port Zones

BALLAST WATER LOG														
VESSEL NAME: Green Hornet								BALLAST TANK 1-STBD						
IMO NUMBER: 0200002								TANK CAPACITY 1200 MT						
Start Point				End Point				Pump	Exch.					
Date	Time	Location	Volume	Date	Time	Location	Volume	(L) Load	(R) Method	Temp	Specific Gravity	Sea Depth	PIC Int.	Remarks
DDMMYY		Port / Lat - Long	MT/m3	DDMM		Port / Lat-Long	MT/m3	(C) Disch.	(F/T) (A/L)	Deg/C				
7-Nov-03	000	PUSAN	0	7-Nov	1030	PUSAN	500	L		16	1.025		KR	
9-Nov-03	000	25 37N-125 38E	500	9-Nov	1000	25 37N-125 47E	800	L		15	1.026	2500	KR	
11-Nov-03	200	HONG Kong	800	11-Nov	360	HONG KONG	300	IT		16	1.012		KR	Adjust trim To 1-Port
15-Nov-03	000	27 45N-150 15W	300	15-Nov	1300	27 45N-150 25W	0	D	ER	16	1.024	4500	RL	
15-Nov-03	1300	27 45N-150 15W	0	15-Nov	1700	27 47N-150 20W	1100	L	ER	16	1.025	4600	RL	
20-Nov-03	2100	LONG BEACH	1100	20-Nov	2300	LONG BEACH	600	D		19	1.025		KR	
22-Nov-03	000	OAKLAND	800	22-Nov	1020	OAKLAND	200	D		19	1.026		KR	Adjust trim To 1-
23-Nov-03	1200													
23-Nov-03	2200													
2-Dec-03	000													
3-Dec-03	000													
7-Dec-03	000													
10-Dec-03	1800													
11-Dec-03	000													
18-Dec-03	000													
2-Jan-04	000													

Release Date: 12-Sept-2008 CMB Control Number 1025-0019
Expiration date: 30-Sept-2008

BALLAST WATER REPORTING FORM

IS THIS AN AMENDED BALLAST REPORTING FORM? YES NO

1. VESSEL INFORMATION	2. VOYAGE INFORMATION	3. BALLAST WATER USAGE AND CAPACITY
Vessel Name:	Arrival Port:	Specify Units Below (m ³ , MT, LT, ST, gal)
IMO Number:	Arrival Date (DDMM/YYYY):	Total Ballast Water on Board:
Owner:	Agent:	Volume Units No. of Tanks in Ballast
Type:	Last Port:	m3
GT:	Country of Last Port:	Total Ballast Water Capacity:
Call Sign:	Next Port:	Volume Units Total No. of Tanks on Ship
Flag:	Country of Next Port:	m3

4. BALLAST WATER MANAGEMENT Total No. Ballast Water Tanks to be discharged:

Of tanks to be discharged, how many: Underwent Exchange: Underwent Alternative Management:

Please specify alternative method(s) used, if any: _____

If no ballast treatment conducted, state reason why not: _____

Ballast management plan on board? YES NO Management plan implemented? YES NO

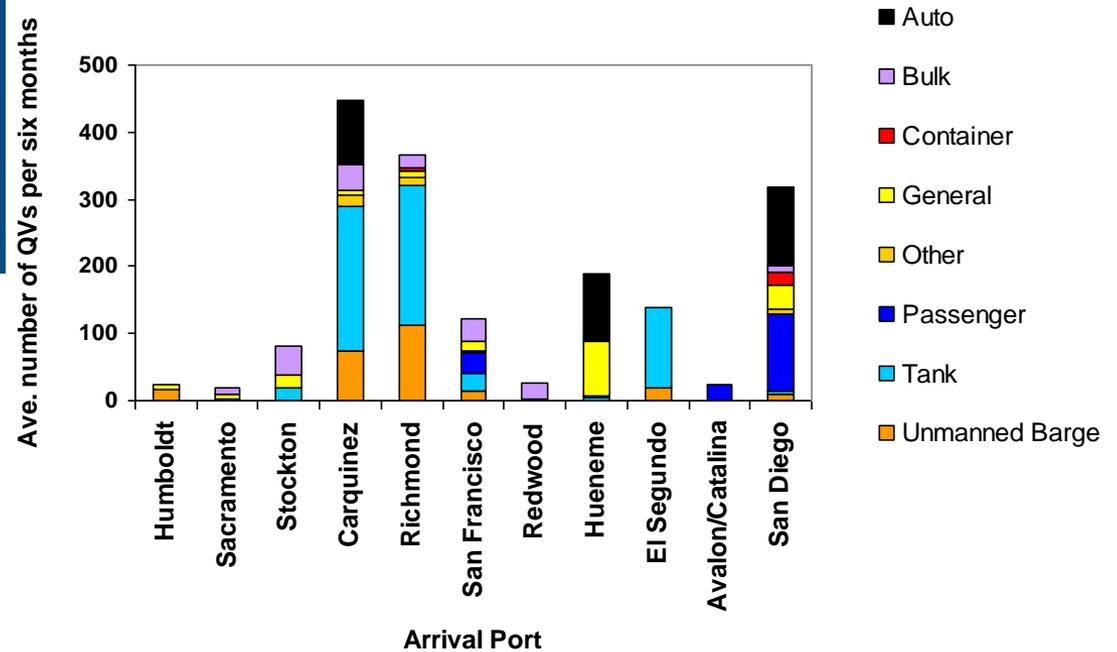
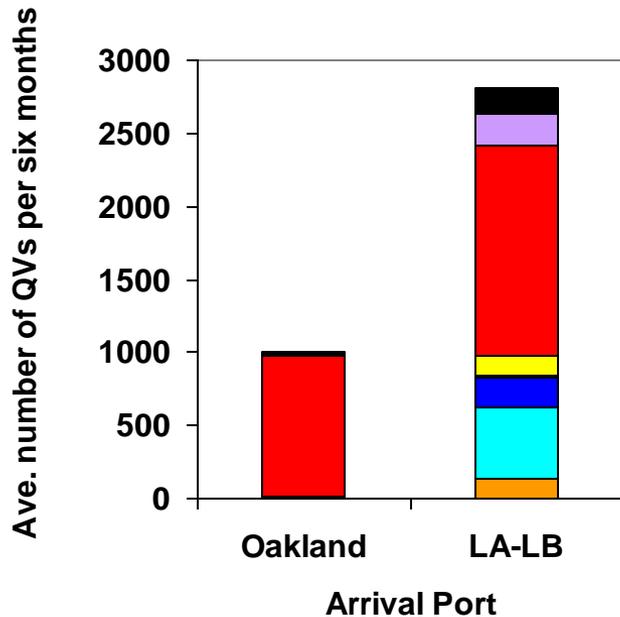
IMO ballast water guidelines on board (res. A.868(20))? YES NO

5. BALLAST WATER HISTORY: Record all tanks to be deballasted in port state of arrival (enter additional tanks on page 2). IF NONE, GO TO #6

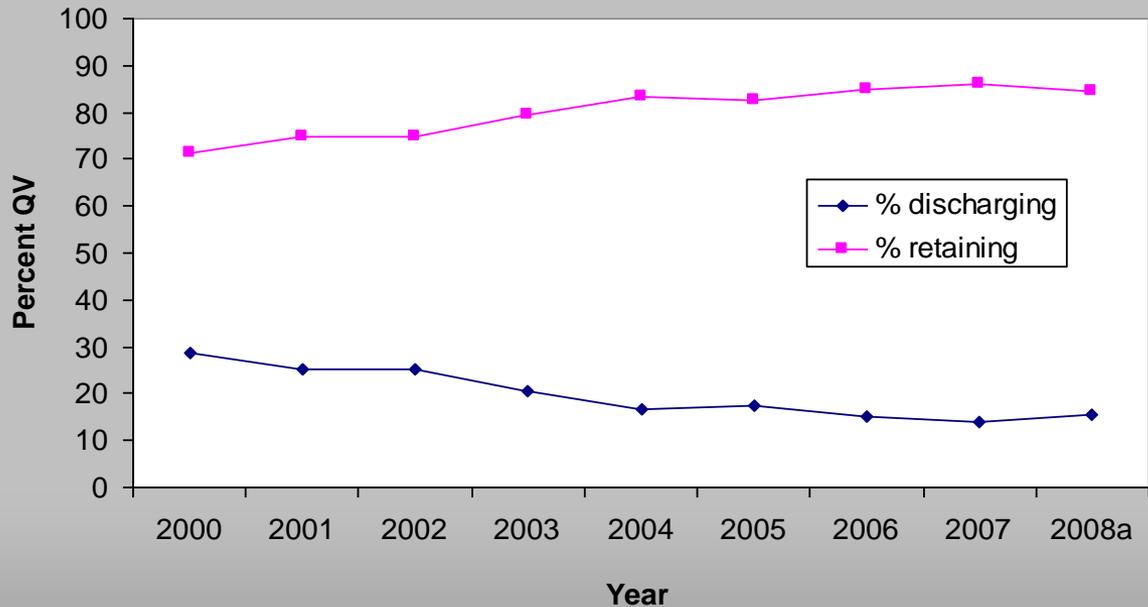
Tanks/ Holds List multiple successive separately	BW SOURCE				BW MANAGEMENT PRACTICES				BW DISCHARGE					
	DATE DDMM/YYYY	PORT or LAT / LONG	VOLUME (units)	TEMP (units)	DATE DDMM/YYYY	ENDPOINT LAT / LONG	VOLUME (units)	% Exch.	METHOD (ER/F/T AL/T)	SEA HT. (m)	DATE DDMM/YYYY	PORT or LAT / LONG	VOLUME (units)	SALINITY (units)
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg

Ballast Water Tank Codes: Forepeak = FP, Aftpeak = AP, Double Bottom = DB, Wing = WT, Topside = TS, Cargo Hold = CH, Other = O

Average Number of Arrivals to CA Ports by Vessel Type

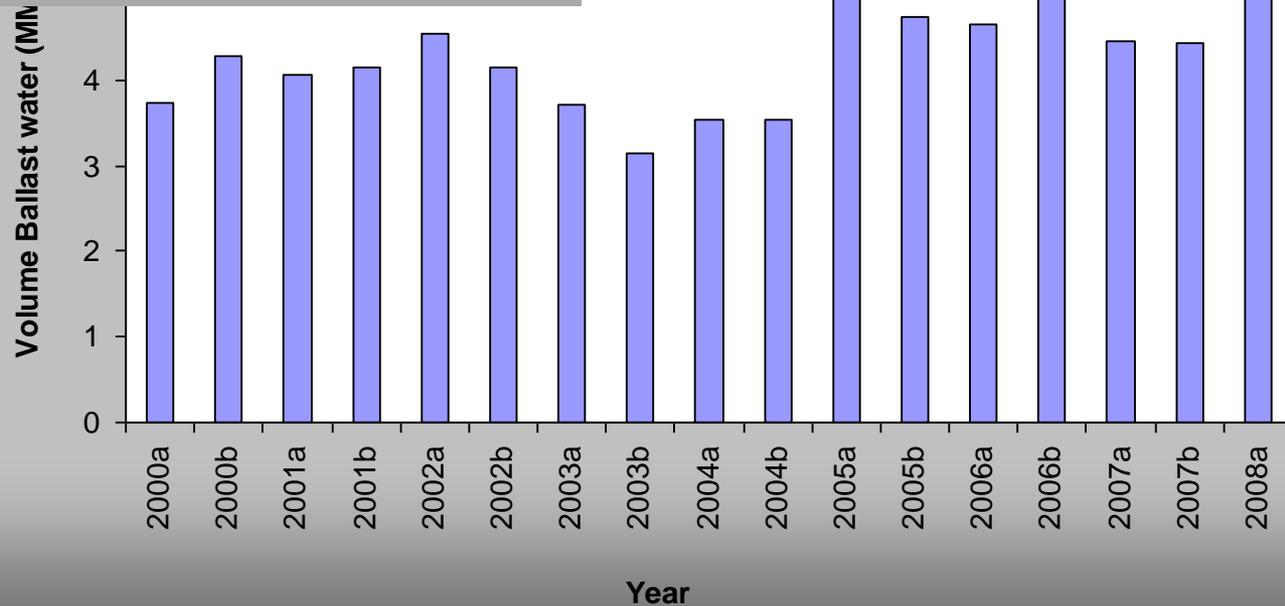


Reported Ballast Water Management



**% Voyages
Discharging Down**

**Total Volume
Discharged UP**

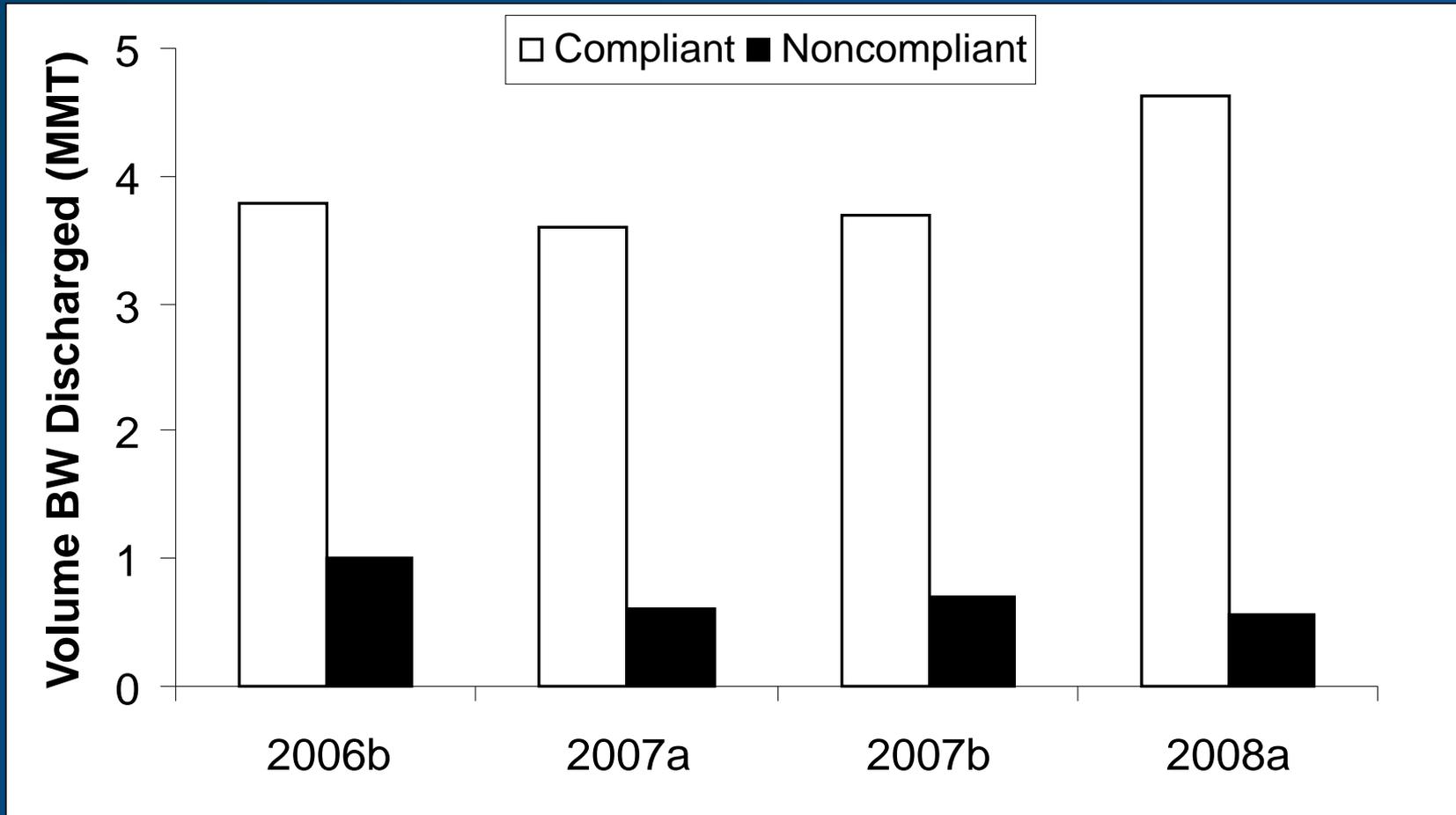


Compliance

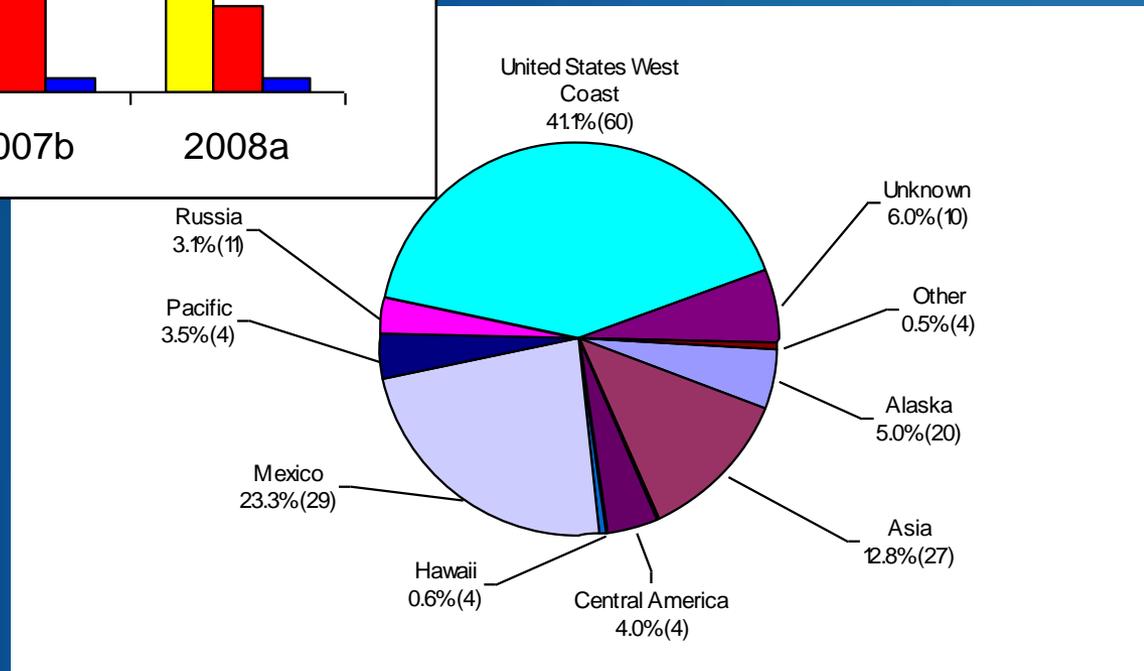
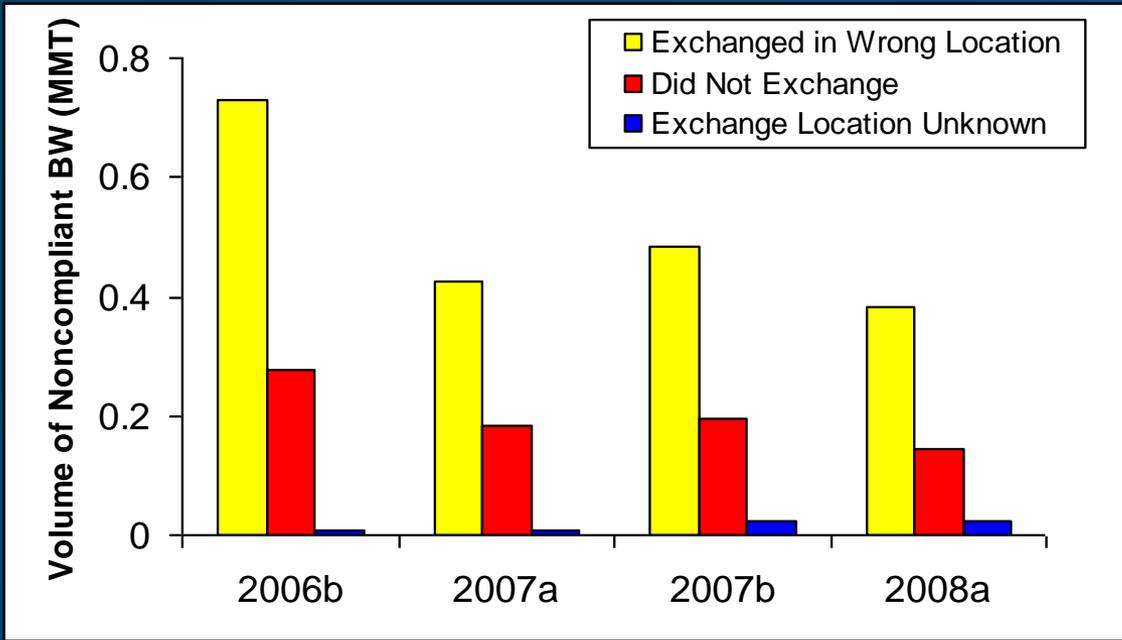
Between July 2006 and June 2008:

- Noncompliant BW discharges have decreased 45%
- More than 135 million metric tons* of ballast water was carried into CA state waters
 - * = ~54,000 Olympic swimming pools
- 98% of that water was managed in compliance with the law (either through retention or legal exchange and subsequent discharge)

Compliant and Noncompliant Ballast Water Discharged by Year



Noncompliant Water Discharged



Ballast Water Treatment Technology

System Manufacturer	Max System Capacity (Pump Rate)	General Approvals (Non-California)	Environmental Approvals	VGP Total Residual Chlorine Compliant	Costs		
					Initial (\$ in Thousands)		Operating (\$ per m ³)
					200 m ³ /hr	2000 m ³ /hr	
Alfa Laval	2500 m ³ /hr	Type Approval (Norway)	IMO Basic & Final	Yes			0.015
Ecochlor**	>13,000 m ³ /hr	USCG STEP ¹ , WA Conditional ¹	IMO Basic, USCG STEP ¹ , WA Conditional ¹	Yes	500	800	0.080
Hamworthy Greenship	1000 m ³ /hr (per pump)		IMO Basic & Final	Yes			
Hyde Marine	6000 m ³ /hr	WA Conditional ¹ , Type Approval (UK), USCG STEP ¹	(UV System) USCG STEP ¹ , WA Conditional ¹	N/A	250 ²	1200 ²	<0.020
OceanSaver	>6000 m ³ /hr	Type Approval (Norway)	IMO Basic & Final	Yes	288	1600	0.06
OptiMarin	3000 m ³ /hr	Type Approval (Norway)	(UV System)	Yes	290	1280	
Qingdao Headway Tech**	4500 m ³ /hr		IMO Basic	Yes			0.0018
Techcross**	>5000 m ³ /hr	Type Approval (Korea)	IMO Basic & Final	Yes	200	600	0.003

Hull Husbandry Reporting Form Submission

Print Form

California State Lands Commission
Marine Invasive Species Program
Hull Husbandry Reporting Form
Public Resources Code – 71250(a) and 71260(f)
June 4, 2008
Part I: Reporting Form

Vessel Name: _____
 Official / IMO Number: _____
 Responsible Officer's Name and Title: _____
 Date Submitted (Day/Month/Year): _____

Hull Husbandry Information

1. Since delivery, has this vessel ever been removed from the water for maintenance?
 Yes No

a. If Yes, enter the date and location of the most recent out-of-water maintenance:
 Last date out of water (Day/Month/Year): _____
 Port or Position: _____ Country: _____

b. If No, enter the delivery date and location where the vessel was built:
 Delivery date (Day/Month/Year): _____
 Port or Position: _____ Country: _____

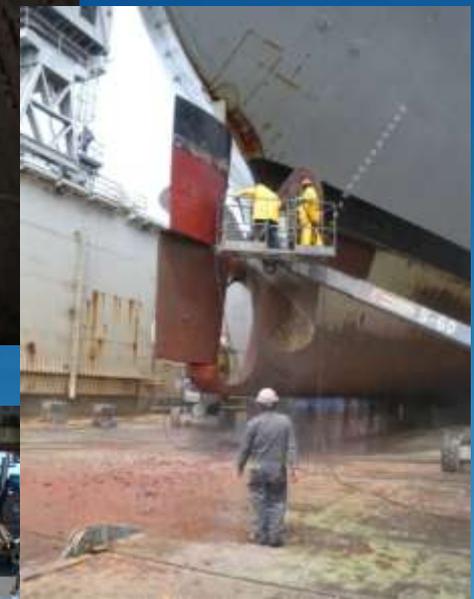
2. Were the submerged portions of the vessel coated with an anti-fouling treatment or coating during the out-of-water maintenance or shipbuilding process listed above?
 Yes, full coat applied
 Yes, partial coat Date last full coat applied (Day/Month/Year): _____
 No coat applied Date last full coat applied (Day/Month/Year): _____

3. For the most recent full coat application of anti-fouling treatment, what type of anti-fouling treatment was applied and to which specific sections of the submerged portion of the vessel was it applied?

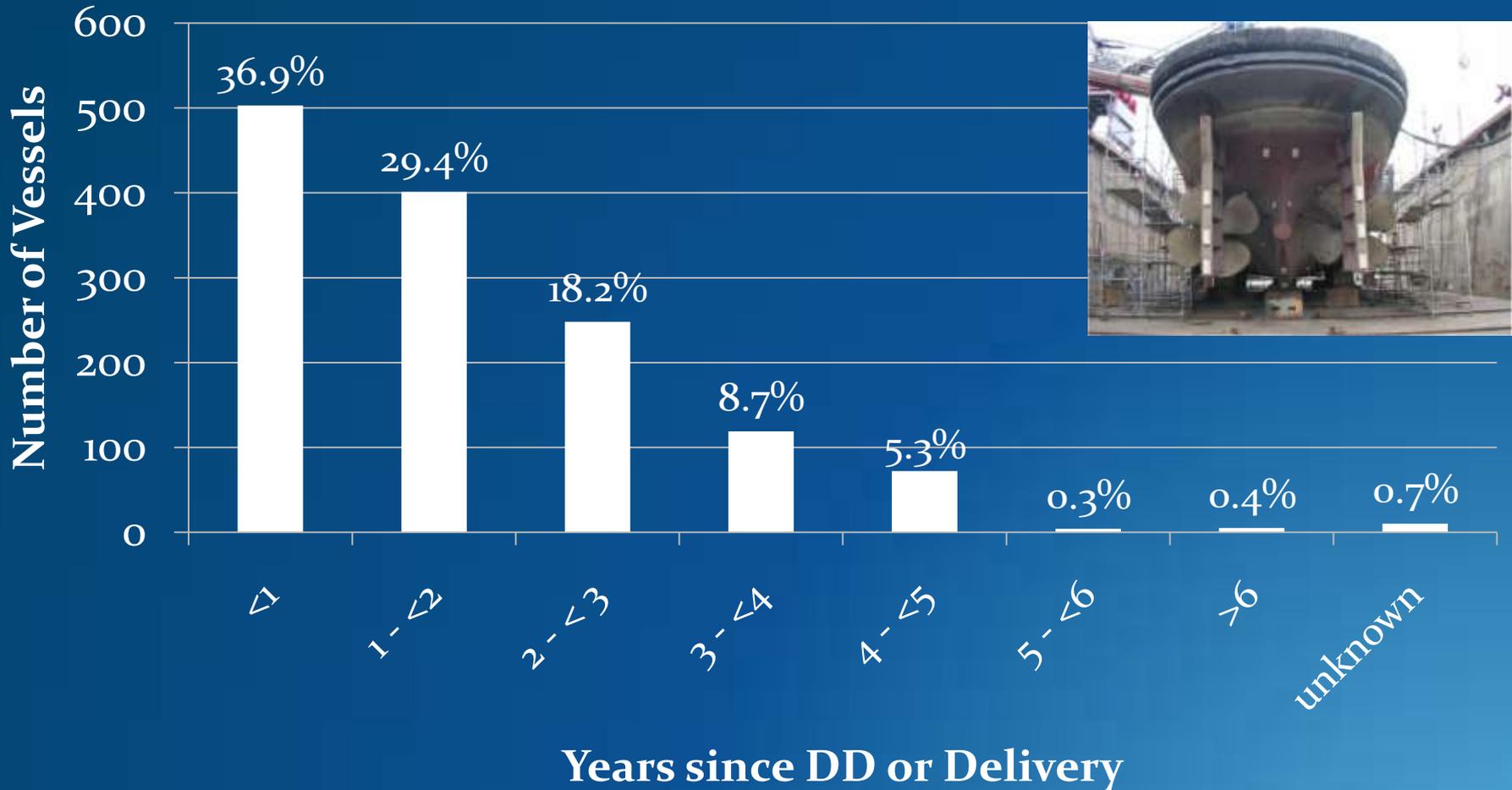
Manufacturer/Company: _____
 Product Name: _____
 Applied on (Check all that apply): Hull Sides Hull Bottom Sea Chests
 Sea Chest Gratings Propeller Rope Guard/Propeller Shaft
 Previous Docking Blocks Thrusters Rudder Bilge Keels

Manufacturer/Company: _____
 Product Name: _____
 Applied on (Check all that apply): Hull Sides Hull Bottom Sea Chests
 Sea Chest Gratings Propeller Rope Guard/Propeller Shaft
 Previous Docking Blocks Thrusters Rudder Bilge Keels

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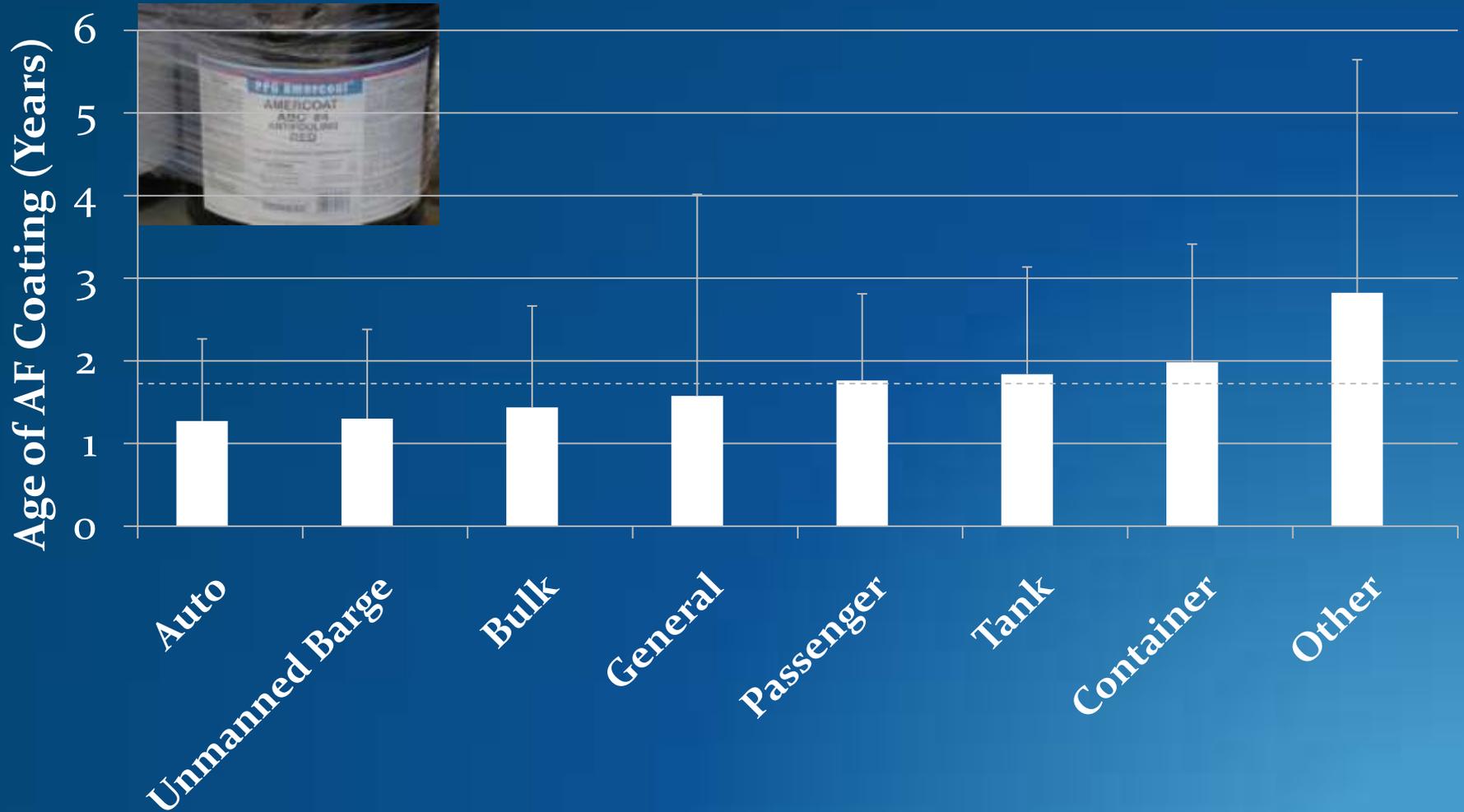


Years since Drydock or Delivery



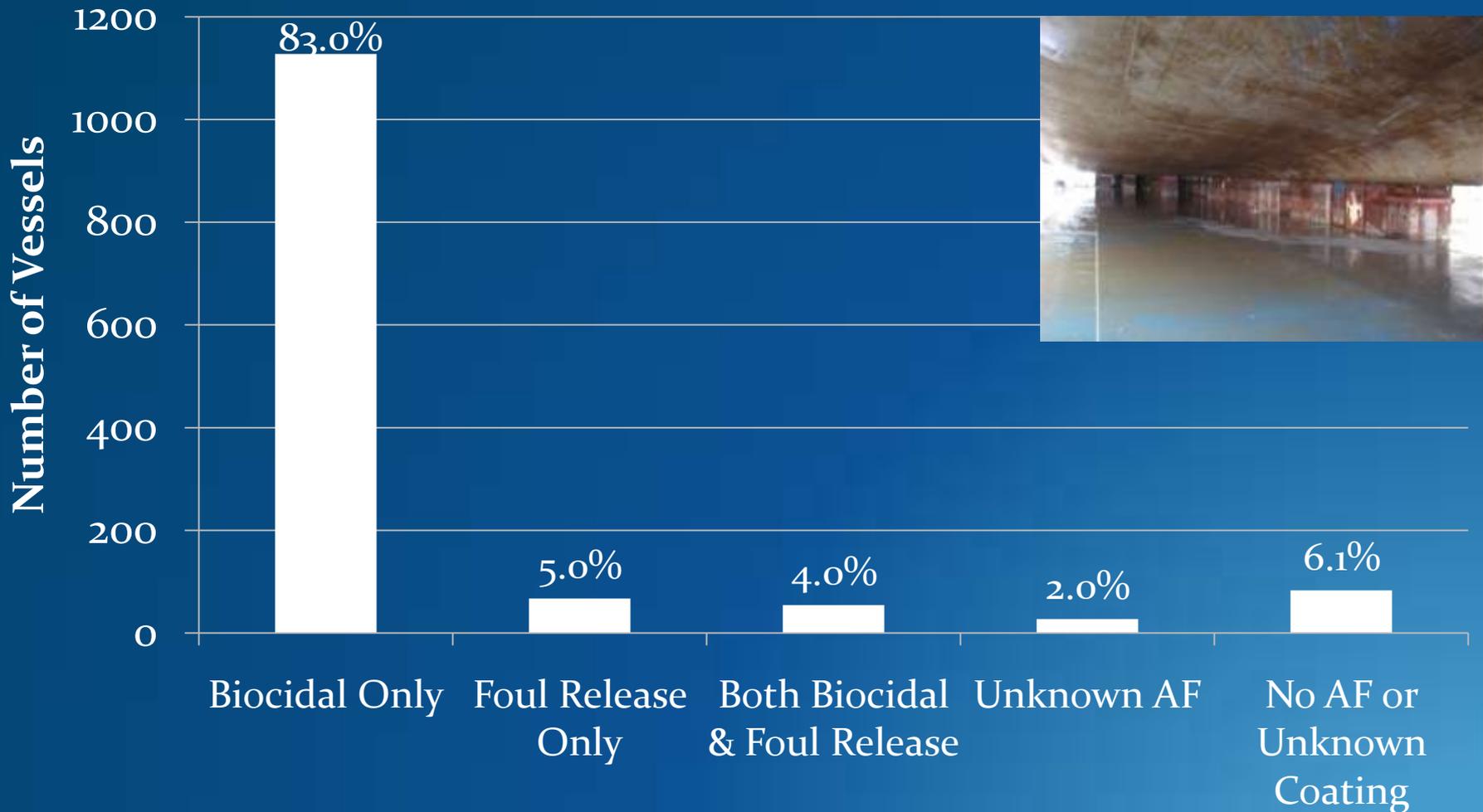
- 98.5 % within past 5 years
- 84.5 % within past 3 years

Age of Antifouling Coating



- 7 of 8 vessel types average 2 years or less

Antifouling Coating Type



- 88.8% of all biocidal coatings used were copper-based

Funded Research

CSLC-Princess Cruise

Installation of treatment technology on Sea Princess - completed



CSLC-Matson Navigation I

Installation of treatment technology on the R.J. Pfeiffer - completed



CSLC - Matson Navigation II

Installation of treatment technology on the ITB Moku Pahu



CSLC - APL

Installation of treatment technology onboard the APL England



CSLC - Glostten/CMA

Dockside technology research & testing facility

Funded Research

CSLC – Portland State University Phases I, II, & III
Assessing the risk of invasions from commercial vessel hull fouling

CSLC - Smithsonian Environmental Research Center Phases I & II Ballast water exchange verification/BEAM



Data Availability

Internal Uses

- Data used for compliance, program assessment, policy development & implementation, directed research, and outreach and education

External Uses

- Data used, upon request, by local, state, federal, and international agencies/organizations as well as various NGOs involved in ballast water and hull fouling issues.

Products

- Legislative reports, white papers, peer-reviewed manuscripts, testimony to lawmakers, local, state, federal, and international presentations.

For More Information

Website: www.slc.ca.gov

- Navigate to the Marine Facilities Division and the Marine Invasive Species Program
- Reports
- Regulations
- Compliance documents (forms)

Contacts

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